



**Title of the Invention:** Set of tools for indoor/outdoor recreational activity

**Statement about federally sponsored research:** This patent application is NOT the  
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## **Background of the invention**

It has been and still is quite fashionable, to practice indoor or outdoors recreational activities or professional competitions, which consist in sending and returning with the help of appropriate raquetts, a ball or similar objects over a net. Generally, the net separates in two equal parts, a field or a court or even a table, and players usually are distributed for the duration of the game, on one or on the other side of the net. Among the activities which correspond to the above description one finds tennis, badmington, raquett ball, ping pong. One activity which is similar to the ones described above, except for the fact that the players do not remain permanently or semi-permanently in separate parts of the court or of the table is the game called squash, where all of the players move in the same field. Another equally different activity is the game called *turning ping pong*, where the players, after having sent the ball above a net placed across a table, run to the opposite side of the table and wait for their turn to hit the ball again over the net and run againg around the table.

Among the recreational or competitive activities where the game consists in using raquetts to send and return a ball over a net dividing a flat, rectangular table in two equal parts, probably the best known is ping-pong. Ping pong games are rigidly organized and the tools (table, raquetts, balls) are strictly defined. The relatively small size of the table makes ping pong suitable to indoor practicing and the small mass of the ball commands total lack of wind for a competition to be plaid outdoors in all fairness. The practice of ping pong requires perfect vision, good reflexes, physical strength and endurance, which are not always met by the average individual willing to have fun while playing with is children or friends.

The present invention concerns new tools to perform a recreational activity or competitive game, consisting in sending and returning an object, usually a ball, over a net using appropriate raquetts. The tool is so designed as to make the practice of this activity easier for beginners, and excruciating for expert players, so that it will never be felt as dull or boring, but always undertaken with thrill and enthousiasm.

## **Description of the several views**

Figure 1 An illustration on the geometrical properties of the invention.

A cylindrical crown is defined as the part of space comprised between the surfaces of two cylinders with the same axis (a), the same height and different diameters. When a cylindrical crown is secated by a plane (p) parallel to the axis, two objects are obtained. In the figure, the shadowed region depicts the object of the invention.

Figure 2. A prototype of the invention. In this particular case, the dimensions of the object of the invention are such that it can be mounted on the frame designed to support a classical ping-pong table.

Figure 3. Description of the geometric parameters defining the invention. Together with the diameter of the cylindrical crown and the length of the straight edges, the object of the invention is characterized by the dihedral angle ( $\alpha$ ) formed by the two planes ( $p'$  and  $p''$ ) containing the axis of the cylinder and one or the other of the long edges.

**Detailed description of the Invention:**

The invention relates to a tool designed to allow the practice of a new recreational activity or competitive game. This new activity or game can be practised indoor or outdoor, on the ground or in water, as for instance in a garden, on the beach, in a swimming pool or in a lake.

The invention consists of a curved solid table or floor, the surface of which is usually in the shape which can be obtained by slicing a cylindrical crown, parallel to the axis of the cylinder (Figure 1). This surface is usually placed concave side up, directly resting on the ground or mounted on legs or on floating devices, and can be virtually separated in two, usually equal, parts, by a net usually mounted perpendicularly to the axis of the cylinder (Figure 2). On this surface, objects of different forms, volumes and masses, usually spherical, a few centimeters in diameter and weighing a few grams, can be sent and returned over the net to and from players standing on one or on the other side of the net. To send the objects over the net, the players use raquetts, usually made of wood or plastic or of any other material, usually in the shape of a flat circle, ellipse or square or any other shape suitable to render easier or more difficult at will, the practice of the activity.

The overall size of the surface determines whether the activity is practiced by players standing and moving around the surface itself, as it is the case in the game usually called ping pong, or by players moving on the surface itself, as it is the case in the game of tennis. The invention will be then separately described for the two possibilities, i. e.

- the curved surface is mounted on supports and the players do not stand on it
- the curved surface is resting on the ground and the players do stand and move on it.

**First case:** the curved surface is mounted on supports and the players do not stand on it.

The surface will have variable dimensions, the length will be between one and twelve meters, preferably between two and six meters and the width will be between 50 cm and six meters, preferably between one and three meters. The thickness of the curved crown will be between 0.5 and 90 centimeters, according to the material, preferably between 2 and 10 centimeters. A prototype is depicted in Figure 2. The curved surface can be obtained in any possible way known to the expert in the field of molding or carving objects made of plastic, metal, plexyglass, inflatable material, wood etcetera . In the case in which the surface is obtained by slicing a regular cylindrical crown, the curvature of the surface will be such that the concave diedral angle formed by the the two planes containing the axis of the cylinder and one of the outer edges of the long sides, will have values between 5 and 180 degrees, preferably between 20 and 90 degrees (Figure 3).

The net across the surface will be made of any type of material, flexible textiles like cotton or nylon held by appropriate devices as well as rigid materials such as wood, plastics, plexyglass or metal. The dimension of the net will be appropriate to match the width of the surface, although in some instances the net could be smaller and provide only a partial obstacle to the movement of the object sent across the table by the players, and its height can vary between 5 and 150 centimeter, preferably between 10 and 30 centimeters. The surface can rest on a frame of wood, metal or plastic, of the appropriate dimensions to hold it firmly, and maintain it at a distance from the ground varying between 20 and 190 cm, preferably between 60 and 120 centimeters. For practicing in water, the frame can be added with

appropriate floating devices to maintain it at the desired height above the surface of the water.

**Second case:** the curved surface is resting on the ground and the players practice the activity while standing or moving on it.

The surface will have variable dimensions, the length will be between three and fifty meters, preferably between seven and twentyfour meters and the width will be between one and twenty meters, preferably between two and ten meters. The thickness of the curved crown will be between 0.5 and 30 centimeters, according to the material, preferably between 2 and 10 centimeters. The curved surface can be obtained in any possible way known to the expert in the field of molding or carving objects made of plastic, metal, plexyglass, inflatable material, wood etcetera. In the case in which the surface is obtained by slicing a regular cylindrical crown, the curvature of the surface will be such that the concave diedral angle formed by the two planes containing the axis of the cylinder and one of the outer edges of the long sides, will have values between 5 and 180 degrees, preferably between 20 and 90 degrees (Figure 3).

The net across the surface will be made of any type of material, flexible textiles like cotton or nylon held by appropriate devices as well as rigid materials such as wood, plastics, plexyglass or metal. The dimension of the net will be appropriate to span the width of the surface, although in some instances the net could be smaller and provide only a partial obstacle to the movement of the objects sent across the surface by the players, and its height can vary between ten centimeters and two meters, preferably between fifty and one hundred and twenty centimeters.

The surface can rest on a frame of wood, metal or plastic, of the appropriate dimensions to hold it firmly, but can also be in direct contact with the ground. The ground can have been conveniently dug to allow the surface to rest firmly on it, but can also be left flat and the surface can roll when the players move on it. When the ground is dug in the appropriate way, the surface can be covered by any other materials such as concrete or tar, or tiles, or parallelepipeds of wood or plastic, or any other kind or material in whatever shape, to achieve a surface where objects can bounce and players can move. When the surface can roll, it can also be designed in such a way that the two halves on both sides of the net are not solidarious, and can thus freely roll according to the desire of the players on each half, or according to the position they occupy while playing.

#### **Advantages of the invention.**

When compared to the recreational activities or competitive games consisting in sending and returning a ball over a net to and from players placed on opposite sides, the invention provides a multitude of advantages.

In the case of a curved surface mounted on a frame, the invention offers the advantage of allowing an activity easily accessible to children or to adults not acquainted with quick moving objects, because the curved surface helps the players to maintain the direction of the ball or of the bouncing object within a narrower angle. This allows inexperienced, or physically unfit, players to reach easily for the ball or the object, thus enjoying the game without the frustration of the interruptions which are the consequence of a too frequent missing the ball. On the other hand, experienced players will enjoy the game because the curvature of the surface will make it difficult to predict or guess the direction of the ball or of the object after the rebounding, when



the ball is sent by an experienced player towards the edges of the curved surface.

This adds a thrill and renewed difficulty at every stage of progress in the skills of the game. Last but not least, the possibility to practice the game on a surface floating in water offers unprecedented reasons for fun and sport.

In the case of a curved surface on the top of which the players stand and move, the advantages are paramount for the experienced players, who will find it more challenging to predict or to guess the trajectory of the ball after rebounding. When the surface can roll, and even more so when the two halves of the surface can roll independently from one another, the skill of the players will be not only to reach the returning ball and guess its direction, but also to influence its direction by appropriately positioning themselves on the surface so as to modify the angle of impact of the arriving ball with the moving surface. This too adds a thrill and renewed difficulty at every stage of progress in the skills of the game.

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